

XVIII. *Contribution towards the history of a new form of larvæ of Psychodidæ (Diptera), from Brazil.*  
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PLATES X. and XI.

THE perusal of Baron Osten Sacken's "Contributions to the Study of Liponeuridæ" (Berl. Ent. Zeitschr., vol. xl., 1895, p. 148), a copy of which I owe to the kindness of the author, recalled to my memory a group of minute Diptera, the larvæ of which abound around the waterfalls in our woods, in the neighbourhood of the larvæ of *Curupira* (*Blepharoceridæ*), and are remarkable for being provided, like the latter, with a longitudinal row of suctorial ventral discs.

While the larvæ of *Curupira* are fastened to the bare rocks, over which the stream of water falls down perpendicularly, those of the *Maruis* (*Marui* is a diminutive of *Marù*, fly, in the *Tupi*-language, adopted in Portuguese) live on rocky walls, covered with a slippery carpet of algæ, and kept moist by the spray of the waterfalls or by the drops of water running down from above. I discovered them in 1881 in looking for a small *Helicopsyche* that occurs in similar localities, and began to make a special study of them, but was prevented by circumstances from continuing it. The information I had obtained about them seemed to me too fragmentary for immediate publication. As I cannot, at present, expect to complete these observations, although I had hoped it at that time, I feel inclined to publish now at least some of my old drawings, and to accompany them with some remarks for the sole purpose of calling the attention of future visitors to our country to these remarkable animals.

For this particular purpose I shall begin by describing my very simple method of catching them. The larvæ are so small that they are hardly recognisable *in situ*,

and, therefore, can hardly be taken hold of singly. The flat of the hand is, therefore, passed over the slippery wall, the surface of the hand is scraped with a knife, which is then rinsed in a tumbler of fresh water; the larvæ thus obtained are soon found fastened to the sides of the tumbler, the muddy water of which is then replaced by fresh. Unlike the *Curupira*-larvæ, which die very soon, those of *Maruina* bear confinement very well, change into pupæ, and the majority of the latter produce flies in a week or two. Whether the mould which appears on pupæ very soon after they are dead, is the cause of the death, or its consequence, I cannot say.

Three kinds of larvæ are easily distinguished: two of them have the appearance of woodlice (*onisciform*, O. S.); their abdominal segments bear on each side straight thorns, the length of which is much less than half a breadth of the abdomen; in one of the species, *Maruina pilosella* (figs. 2, 3, 4) they are simple, in the other (*M. spinosa*) they have from four to six, seldom seven, branches. The third species, *M. ursula*, which, in many respects, is very aberrant (fig. 1), bears on each of the abdominal segments three pairs of very long and very much curved bristles, of which one pair is inserted very near the lateral margin of the segment, and two pairs, close by each other, are placed on one of the three dorsal plates of the segment. The abdominal segments of the two other species likewise show three dorsal plates on each abdominal segment, and laterally these segments are very conspicuously divided into three lobes (fig. 4). A character that the three species of larvæ have in common is the head, which is much narrowed in front, and has on its upper side two small eyes, placed near the middle of the lateral margin; a little inside and in front are two short antennæ, without any joints, and still more inside of these are two minute punctured spots (figs. 1 and 3).

In *Maruina pilosella* and *spinosa* the last abdominal segment projects but little beyond the penultimate segment, which rounds off the end of the abdomen (fig. 2); in *Maruina ursula* this last segment takes the shape of an elongate, bottle-shaped projection, at the end of which the two principal branches of the trachæ meet. These openings are surrounded by a coronet of

delicate, short hairs, between which a globule of air of considerable size is sometimes visible (fig. 11). The anal opening in this species lies on the ventral side a little before the openings of the air-tubes. The fig. 1 shows on each side a pair of protruding tracheal branchiæ. Fig. 5 shows, on a larger scale, the tracheal branchiæ of the larva of *M. pilosella*, six in number.

The ventral side of the larvæ of the three species is provided with eight suctorial discs, the last of which is placed on the penultimate segment (fig. 2). As to their structure I must refer to the figures (figs. 6 and 7), as it is from these only that I could describe them now. The figure of the rather flat, not, as in *Curupira*, very convex pupa (fig. 8), requires no further explanation; I would only call attention to the wicker-basket-like covering of the claviform respiratory tubes (fig. 9).

The fly strikes one at once by its singular appearance in repose. Examined from the ventral side, for instance, when resting on the side of the tumbler, the eyes seem to stare at one from the middle of the body, because the head is so much bent under the body, pointing backwards; from above the head cannot be seen at all. The wings, beset with long hair, look like two narrow stripes, directed backwards and a little outwards, and are raised considerably above the body; the peculiar twist they have is represented in fig. 13.

The venation of the wings (fig. 12) resembles that of *Psychoda*; they end in a point in *Maruina pilosella* (fig. 12a); the end is more obtuse in *M. spinosa* (fig. 14); I am not quite sure, however, whether this character belongs to the species, or is merely sexual.

The antennæ are represented as 16-jointed in all my old drawings; the third and the following joints show verticils of hairs near the base. The palpi are 4-jointed, the two last joints are beset with elongated scales, about 0,02–0,05 long.

EXPLANATION OF PLATES X. and XI.

PLATE X.

- FIG. 1.—*Maruina ursula*, full-grown larva, from above (45 : 1);  
l, air-bulb.
- FIG. 2.—*M. pilosella*, full-grown larva, from below (15 : 1).
- FIG. 3.—Anterior end of the same, from above (45 : 1).
- FIG. 4.—Left side of the fifth abdominal segment of the same,  
from above (180 : 1).
- FIG. 5.—Posterior end of the same, with extended tracheal  
branchiæ (90 : 1).
- FIG. 6.—Sixth and (7) Seventh suctorial discs of *Maruina spinosa*  
(180 : 1).

PLATE XI.

- FIG. 8.—*Maruina pilosella*, pupa (25 : 1).
- FIG. 9.—Its breathing-tubes, from different sides (180 : 1).
- FIG. 10.—Breathing-tube of the pupa of *M. spinosa* (90 : 1).
- FIG. 11.—*M. pilosella* ♂, in repose, dorsal and ventral view (15 : 1).
- FIG. 12.—Wing and (12a) tip of wing of the same (90 : 1).
- FIG. 13.—Wing of the same, in repose, dorsal view (25 : 1).
- FIG. 14.—Tip of the wing of *M. spinosa* ♀ (90 : 1).
- FIG. 15.—Poiser of the same (90 : 1).
- FIG. 16.—Head of the same from above (90 : 1); f, antennæ;  
t, palpus.
- FIG. 17.—Tip of the abdomen of the ♀ of the same species (90 : 1).
- FIG. 18.—Last tarsal joint of the intermediate foot of *M. pilosella* (360 : 1).
- FIG. 19.—Tip of the abdomen of the ♀ of the same species (180 : 1).
- FIG. 20.—     "     "     "     of the ♂     "     "     " (180 : 1).